15.04.045 – National Electric Code 2014 NFPA 70 - Amendments

1. **Article 110 Section 110.5 Conductors:** Revise by deleting and substituting the following:

Other than service conductors provided by the Utility or multiplexed aerial cables as allowed in Article 396 Section 396.2(4) that comply with Article 310, all conductors shall be copper unless otherwise specifically approved by the City of St. Charles Building and Code Enforcement or the City of St. Charles Electric Utility.

2. **Section 110.13 (A) Mounting:** Add a new paragraph to read as follows:

(A) Mounting. All electric panels mounted on concrete or masonry walls that are either exterior walls or below grade, shall have a minimum of 1/2 inch plywood installed behind the panel, or the panel shall be mounted to structural mounting channel that provides a minimum 1/2 inch airspace between the panel and the wall, for the purposes of support and to help prevent moisture entering the panel. Such mounting shall allow panel replacement if required.

3. **Section 210.70 Lighting Outlets Required:** Add a new paragraph to read as follows:

(D) Illumination of Mechanical Equipment. All occupancies shall have luminaries installed within four (4) feet of the front of all electric panels and within four (4) feet of mechanical heating equipment to enable servicing the equipment.

4. **Article 230 Services**

a. Section 230.2 Number of Services, (B) Special Occupancies: By special permission, which means written consent and approval by the City of St. Charles Municipal Electric Utility, additional services shall be permitted for either of the following:

(1) Multiple-occupancy buildings where there is no available space for service equipment accessible to all occupants.

(2) A single building or other structure sufficiently large to make two or more services necessary.

Add new paragraph to read as follows:

(3) Multiple-occupancy buildings will have either an external building main disconnect, a key operated shunt trip main disconnect, or a parallel key operated shunt trip main disconnects for all services supplied to the building. Parallel shunt trip key operated main disconnects must be provided and installed in a manner approved by the City of St. Charles Municipal Electric Utility

b. **Section 230.3 One Building or Other Structures Not to be Supplied Through Another:** Revise by deleting and substituting the following:

230.3 One Building, or Other Structure, or Tenant Space, Not to be Supplied Through Another, Service conductors, feeders, or branch circuits of one building, or other structure, or tenant space shall not pass through the interior of another building, or structure, or other space.

c. **Section 230.6 Conductors Considered Outside the Building:** Add new paragraph to read as follows:

(5) Installed in any “common area” (hallway, corridor or common space accessible to multiple premises) that meets the construction requirements of a one-hour fire rating. Conductors shall be installed in solid metal raceway pipe within “common areas” and shall have a label every five (5) feet identifying the conductors within the conduit.

d. **Section 230.44 Cable Trays: Delete entire section**

e. **Section 230.46 Spliced Conductors:** Revise by deleting and substituting the following:

230.46 Spliced conductors: Splices in service entrance conductors, other than those installed by the Electric Utility, are not allowed.

f. **Section 230.70 General (A) Location, (1) Readily Accessible Location:** Revise by deleting and substituting the following:

(1) Readily Accessible Location. Service disconnecting means shall be provided either outside the building or through a shunt trip main with remote control at the Fire Control Panel and shall have provisions to allow the service to be locked open. Each building/tenant space shall have a main disconnect incorporated within the main distribution panels inside the space in addition to any external main or building shunt trip main for multiple occupancy buildings.

g. **Section 230.70 General (A) Location: (3) Remote Control:** revise by deleting and substituting the following: Where a remote control device (s) is used to actuate the service disconnecting means, the service conductors installed inside a building without over current protection shall not exceed five (5) feet in length.

h. **Section 230. 79 Rating of Service Disconnecting Means (C) One Family**

Dwelling, (D) All Others: Revise by deleting and substituting the following:

C) One or Two Family Dwelling: All electric panel installations for new single family detached dwellings shall be a minimum of 200 -ampere rated. The main service disconnecting means (circuit breaker or fused switch) shall be 200 -ampere rated.

D) Multi -family and Single-family Attached Dwellings. All apartment or dwelling unit electric panel installations for new multi -family dwellings and new single family attached six (6) or less dwelling units shall be a minimum of 100 - ampere rated. The occupancy main service disconnecting means (circuit breaker or fused switch) for each apartment or dwelling unit shall be a minimum of 100 -ampere rated.

E) All Others. For all other installations, the service disconnecting means shall have a rating of not less than 60 - ampere, unless approved by the City of St. Charles Municipal Electric Utility.

5. **Article 250 Grounding and Bonding**

a. Section 250.24 Grounding Service -Supplied Alternating -Current Systems (A) System Grounding Connections (1) General: Revise by deleting and substituting the following: The grounding electrode conductor connection from each grounding.

b. electrode shall be made at a single point at the terminal or bus to which the grounded service conductor is connected at the service disconnecting means.

c. Section 250.53 Grounding Electrode System Installation (D) Metal Underground Water Pipe (2) Supplemental Electrode Required: revise by deleting and substituting: A metal underground water pipe shall be supplemented by an additional electrode of a type specified in 250.52 (A) (2- 8). If the additional is a rod type as specified in 250.52 (A) (5), then electrode must also have a supplemental additional electrode of a type specified in 250.53 (A) (2) unless as noted in 250.53 A) (2) Exception the first supplemental electrode has a resistance to earth of 25 ohms or less as evidenced by a fall -of -potential test witnessed by the City of St. Charles Municipal Electric Utility. Supplemental electrodes shall be connected with a grounding electrode conductor to the grounded service - entrance conductor at the service main disconnecting means.

d. Section 250.62 Grounding Electrode Conductor Material: revise by deleting and substituting the following: All grounding electrode conductors shall be copper, and the installation of the conductor shall protect against corrosion. Conductors of the wire type shall be solid or stranded, and insulated, or covered, or bare.

e. Section 250.64 Grounding Electrode Conductor Installation: Aluminum or Copper -Clad Aluminum Conductors. Delete entire Item (A)

C) Continuous: revise by deleting and substituting the following: Grounding electrode conductor(s) shall be installed in one continuous length without a splice or joint.

E) Raceways and Enclosures for Grounding Electrode Conductors. (1)General: revise by including additional language as follows: Ferrous metal raceways and enclosures for grounding electrode conductors shall be electrically continuous from the point of attachment to cabinets or equipment to the grounding electrode and shall be securely fastened to the ground clamp or fitting. Ferrous metal raceways and enclosures shall be bonded at each end of the raceway or enclosure to the grounding electrode or grounding electrode conductor. All grounding electrode conductor raceways that are exterior and exposed above grade shall be ferrous metal RMC or IMC conduit. Schedule 40 rigid PVC conduit is permitted for grounding electrode conductor raceways installed both above grade and underground in the interior of a building, as well as exterior underground if the

entire raceway is -completely below grade. Schedule 40 rigid PVC grounding electrode conductor raceways are not required to be electrically continuous.

F) Installation to Electrode(s). revise by deleting and substituting the following: Unless granted a specific exemption by the City of St. Charles Municipal Electric Utility, all grounding electrode conductors and raceways must be installed separately and continuously from each grounding electrode to the service grounded conductor neutral) grounding/bonding termination point at the service main disconnect.

f. **Section 250.68 Grounding Electrode Conductor and Bonding Jumper Connection to Grounding Electrodes (C) Grounding Electrode Connections: r**evise by deleting (1) exception; and substituting the following for: (2) The metal structural frame of a building can only be used as a bonding conductor for a grounding electrode conductor by specific approval of the City of St. Charles Municipal Electric Utility.

g. **Section 250.118 Types of Equipment Grounding Conductors**: Revise by deleting and substituting the following: **250.118 Types of Equipment Grounding Conductors**: The equipment grounding conductor must be a separate conductor run with the circuit conductors unless given exemption by the City of St. Charles Municipal Electric Utility or an approved certified testing agency.

6. **Article 300 General Requirements for Wiring Methods and Materials**

a. **Section 300.1 Scope (A) All Wiring Installations**: Add new paragraph to read as follows:

(1) With the exception of one and two family dwellings, all current carrying conductors exceeding 50 volts shall be installed in rigid metal conduit, intermediate metallic conduit, electrical metallic tubing, flexible metallic tubing, MC cable, or AC cable, with the exception that PVC conduit may be used with the approval of the City of St. Charles Building and Code Enforcement Department for corrosive or other special application areas.

b. **Section 300.5 (C) Underground Installations:** delete Exception No. 1 and delete Exception No. 2

c. **Section 300.5 Underground Installations, (D) Protection from Damage, (3) Service Conductors:** Revise by deleting and substituting the following: (3) Service Conductors. Single and two family dwelling underground service conductors shall be installed in minimum 3" Schedule 40 PVC. All other underground service conductors shall be installed in RMC, IMC, or Schedule 40 PVC conduit that is encased in concrete unless given exemption by the City of St. Charles Municipal Electric Utility.

d. **Table 300.5 Minimum Cover Requirements, 0 to 1000 Volts, Nominal, Burial in Millimeters (Inches):** Delete the third row table entries related to Under a Building.

e. **Table.300.5 Minimum Cover Requirements, 0 to 1000 volts, Nominal, Burial in Millimeters (Inches):** Revise by deleting and substituting the fourth row to read as follows: Table 300. 5 Minimum Cover Requirements, 0 to 1000 Volts, Nominal, Burial in Millimeters (Inches). Under minimum of 102 mm (4 inch) thick concrete interior or exterior slab with no vehicular traffic and the slab extending not less than 152 nun (6 inch) beyond the underground installation.

7. **Article 310 Conductors for General Wiring**

a. **I1 Installation: Section 310. 10 Uses Permitted (If) Conductors in Parallel (3)Separate Cables or Raceways:** revise by deleting and substituting: Where run in separate cables or raceways, the cables or raceways with conductors shall have the same number of conductors and shall have the same electrical characteristics. All conductors of a circuit shall have the same physical and electrical characteristics.

b. **Section 310. 106 Conductors (B) Conductor Material**. Revise by deleting and substituting the following: (B) Conductor Material. Other than service conductors provided by the Utility, or multiplexed aerial cables as allowed by Section 396. 2 (4) that comply with Article 310, all conductors shall be copper unless otherwise specifically approved by the City of St. Charles Building and Code Enforcement Department or the City of St. Charles Municipal Electric Utility.

8. **Article 314 Outlet, Device, Pull, and Junction Boxes; Conduit Bodies; Fittings; and Handhole Enclosures:**

a. Section 3143 Nonmetallic Boxes. Delete this section.

b. Section 314. 17 (C) Nonmetallic Boxes and Conduit Bodies. Delete this section.

c. Section 314.43 Nonmetallic Boxes. Delete this sectio

9. **Article 334 Nonmetallic -Sheathed Cable: Types NM, NMC, and NMS**

a. **Section 334.40 Boxes and Fittings (A) Boxes of Insulating Materials** Revise by deleting and substituting the following: Nonmetallic outlet boxes are only permitted for use in corrosive applications as determined and approved by the City of St. Charles Building and Code Enforcement Department.

b. **Section 334.40 Boxes and Fittings (B) Devices of Insulating Materials** Delete this section.

10. **Article 695 Fire Pumps: Section 695.3 Power Source(s) for Electric Motor –Driven Fire Pumps, (B) Multiple Sources (2) Individual Source and On -Site Standby Generator (a) Signage:** Add new paragraph to read as follows: Where a generator provides a secondary source for a fire pump, and the generator feeds other systems, clearly marked key operated shunt trip switches must be provided at the fire panel allowing Fire Department personnel the ability to open main breakers to panels not feeding the fire pump.

11. **Article 700 Emergency Systems Section 700.16 Emergency Illumination**: Add new paragraph to read as follows: (1) Additional spaces that require emergency lighting shall include all restrooms and mechanical rooms.

12. **Article 701 Legally Required Standby Systems:**

I General: Section 701.5 Transfer Equipment: Add new paragraph to read as follows:

(D) Transfer Equipment Requirements: Open type transfer switches are the only approved method for connection of standby systems. All transfer switch connections shall be " break before make" to insure the complete separation from the utility system and the generator supply. No parallel operation with the utility system shall be allowed. A minimum time delay of three (3) seconds and a maximum of ten (10) seconds after loss of utility power should be established before starting the generator. Utilization of Kirk Key systems or other mechanical means of isolating generating sources from the utility source are not allowed.

b. **III Sources of Power, Section (B) Generator Set:**Add new paragraph to read as follows:

6) Generator Noise Output. The maximum noise level allowable within ten (10') feet of transformer, switchgear, or other specified equipment as required and operated by the City of St. Charles Municipal Electric Utility (SCMEU) is 80dBA decibels). Sound enclosures or sound barrier walls or other sound mitigation may be required if the noise level near SCMEU equipment exceeds 80dBA. Analysis of the need for sound abatement equipment will be performed by the City of St. Charles Municipal Electric Utility personnel after the generator is installed and tested.

(2016-M-19 : § 1;2016-M-10 : § 1;2010-M-47 : § 1;2003-M-79 : § 2)